The Detection and Tracking of Satellite Image Features Associated with Extreme Physical Events for Sensor Web Targeting Observing

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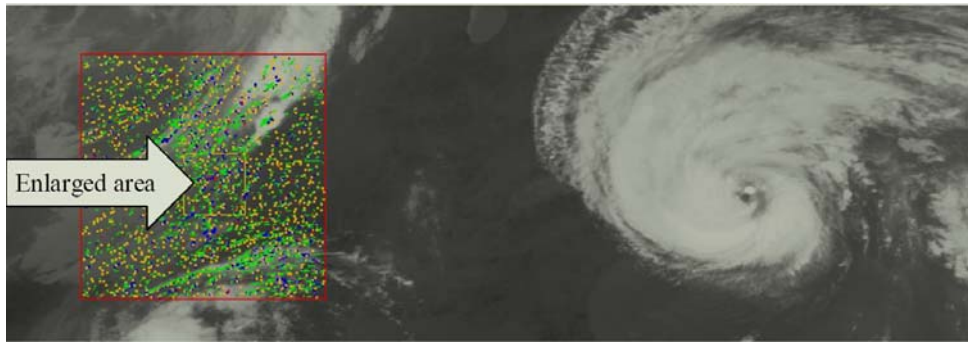
Objective

This project will demonstrate a capability to detect, track and rank radiance structures in satellite image data that are associated with extreme physical events. Our objective is to define key elements of a generalized technology capable of populating cross-discipline target ranking models for Sensor Web application. Secondly, a single interface is desired for event detection and tracking algorithms to access data from multiple, diverse sensors and models. The third objective is to enable discovery of new physical event detection models by implementing the capability to measure and rank geometric characteristics and show application in detection of the onset of convection.



A prototype algorithm detected and tracked over a thousand objects in the September 18, 2003 GOES IR image with Hurricane Isabel. The detected objects appear as an overlay of orange dots; if tracked, objects appear as green lines.

Approach

- Our technical approach involves developing a capability to evaluate prototype components for image event detection that can support the needs of complex multi-discipline physical models.
- The prototype detection and tracking algorithms and techniques will serve as a basis for comparative analysis of detailed implementation approaches for the virtual sensor platform and event data models.

Co-I's/Partners

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Key Milestones

- Modify WCS server to work with GOES data prototype detection and tracking algorithms 03/2007
- Install and configure virtual sensor platform 06/2007
- Develop automated algorithms for overshooting tops and Enhanced-V, and methods to assess convective initiation detection skills 09/2007
- Finish assessment of physical data models and methods on GEO and LEO case study datasets 12/2007

$TRL_{in} = 2$

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